

would be the institution of a State examination, which everyone should be required to pass, irrespective of any degree or diploma he should otherwise obtain, as advocated by Dr. Ewart in his address at St. George's Hospital. The London students have a grievance in that the diploma of the Royal Colleges does not entitle the holder to an M.D. degree, and the University of London degree is comparatively inaccessible to the average student. To meet this difficulty, Dr. Allchin frankly contended that the University should grant a degree in medicine accessible under reasonable conditions to the average man, reserving for those who desired them honours examinations more stringent than the pass ones. Sir Douglas Powell also expressed his regret that the diploma of the Royal Colleges could not be signalised by some more definite designation than it now carries. He would make any further work beyond the requirements for the qualifying examinations more strictly post-graduate work. He says:—

"When a man has qualified in his first two years' subjects by passing the required examination, he would do well to proceed to a six months' or a longer course in those subjects for the higher university degrees, and when he has qualified in the second grade and obtained his licence to practise he may proceed to post-graduate clinical, pathological, or other research for his final examinations in those degrees or for the membership of the Royal College of Physicians or fellowship of the Royal College of Surgeons. A university degree and the higher grades of medicine and surgery should be regarded as something beyond and in a sense outside a qualification to practise—as an academic or other distinction for the attainment of which a man may take as long as he pleases, but for which certainly some additional work in each grade or period of his studies should be required."

There is a parallel to this in the case of veterinary medicine, in which the University degree does not take the place of the diploma of the Royal College of Veterinary Surgeons, as it is not a licence to practise, as was pointed out by Prof. Lander in his address at the Veterinary College.

Post-graduation study and research in medical subjects are essential if the practitioner is to keep abreast of recent advances, if the science of medicine is to advance, and the public health to improve. In London, with its seven millions of inhabitants, the supply of clinical material for teaching and research is unique, but there can be no question that it is not utilised nearly to the full extent. The West London Hospital, the London School of Clinical Medicine, the Polyclinic, and a few hospitals are doing excellent work in post-graduate teaching, but if London is to be, as it ought, a great centre for post-graduation work, there must be more coordination and concentration among the numerous special hospitals. The system which makes our hospitals and medical schools dependent on voluntary support has led to the founding of a number of hospitals for special diseases, widely scattered, and therefore largely unavailable for teaching purposes, draining the general hospitals of the particular cases they admit, and using up public subscriptions which might be better utilised. There can be no doubt, on the score of economy alone, that a combination between many of the special hospitals would be of advantage, a view which has been taken by the King's Fund. The poor-law infirmaries also are almost entirely unutilised, yet contain material of the utmost value for teaching and research. Sir Douglas Powell says:—

"I cannot but think further that some affiliative grouping of the great clinical hospitals about the three university centres would be of great value in point of view of financial economy and strength of teaching. It is very possible,

too, that special hospitals and infirmaries might be more utilised than they now are for clinical teaching material, and especially for post-graduate teaching."

As regards research, the special hospitals, the poor-law infirmaries, and the hospitals of the Metropolitan Asylums Board offer unique opportunities for clinical and pathological investigation, but are almost unutilised in this respect, and the general hospitals are unable to do what could and should be done in this direction owing to lack of funds. Contrast this state of affairs with what obtains, say, in Berlin—the newest hospital, the Virchow Krankenhaus, has 2000 beds for all kinds of cases, its department for infectious diseases, its pathological institute, with scientific staff, and the research Institute for Infectious Diseases is close by and affiliated to it—and it must be admitted that London makes but a poor show.

In the teaching of hygiene and the necessary curriculum for the diploma in public health, concentration again is eminently desirable. At present nearly every medical school retains teachers, and the requisite expensive equipment, in each case for the instruction of but a few students.

SCIENCE IN THE EAST.¹

AMIDST the crowded town life of England, a physical science outside the laboratory seems to be becoming a thing of the past. The ordinary British physicist concerns himself with the eccentricities of radium, the cosmogony of the ion, and other matters which are at present but names of mystery to most people. The work of the Indian Survey carries with it the sense of open air and large areas. It deals with subjects which appeal, in part at least, to the intelligence of the average educated man.

A great magnetic survey has been in progress for some years. Up to the date of the report by Captain R. H. Thomas, observations had been made at 808 stations, and three more seasons, it was hoped, would complete the field work, except in so far as repetitions of observations might prove necessary or extensions into the hills might be found practicable. The main part of the magnetic report deals with the inter-comparison of instruments, but there are also some data as to the diurnal inequalities of declination and horizontal force at several of the fixed observatories erected to assist in the survey work. These inequalities are based on five "quiet" days a month, but the non-cyclic change is not explicitly shown, and there seems no statement as to whether it has been allowed for. The difference between the values for 0 a.m. and 11 p.m. in horizontal force is suspiciously large.

Until the question has been actually investigated, it is unsafe to assume that diurnal inequalities from quiet days are really representative of the ordinary day; the part played by disturbance also varies largely from day to day. Thus, though the inequality data are of much intrinsic interest, it is impossible to say in advance what degree of utility they may possess for survey purposes. From the large differences between the inequalities at the different Indian stations, it is clear that problems of some difficulty will have to be faced when it comes to correcting the field observations for diurnal changes, regular and irregular.

Part ii. gives an account of pendulum observations made by Major G. P. Lennox Conyngham and his

¹ Extracts from narrative reports of officers of the Survey of India for the season 1904-5; prepared under the direction of Colonel F. B. Longe, R.E., Surveyor-General of India. Pp. 127. (Calcutta: Government Printing Office, 1907.) Price 2s. 3d.

party at ten stations, including nine nearly on a meridian passing through Darjeeling. The northernmost station, Sandakphu, was at a height of 11,766 feet. The results of this and similar future work promise to be of much interest in connection with the theories proposed to account for the observed large deflections of the plumb line in India, and the deductions made as to the density of the material underlying the Himalayas. The observations at some stations had to be taken in a tent exposed to temperature changes, and one of the chief uncertainties was the determination of the proper temperature correction. Considering that the value of gravity at the base station at Dehra Dun—on which all the other Indian values depend—is arrived at by assuming for Kew the value 981·200 C.G.S., it does seem desirable that some British authority should exist possessing both the apparatus and the scientific knowledge necessary to determine the accuracy of such assumptions. In the meantime, practical geodetic science in the British Empire has to turn for guidance and inspiration to Potsdam, Vienna, or Washington.

Part iii. deals with the report by Mr. J. P. Barker on tidal observations and levelling operations. A good many data are given as to tidal constants at various stations, and there is interesting information as to the degree of accuracy of the predicted times and heights of low and high water. At the open coast stations in 1904 the mean error in the predicted times was only nine minutes, and the mean error in the predicted heights was less than 3 per cent. of the range; but in the riverain stations the errors were nearly twice as large, and there seems room for improvement.

Part iv. describes triangulation in Baluchistan, while part v. deals with survey operations of a rapid kind made with the Somaliland Field Force. The officer in charge of the latter, Captain G. A. Beazeley, and his assistant, Captain C. G. Hunter, evidently had a very stirring time.

One of the duties of the tidal officers seems to be the inspection of anemometers at tidal stations. At first sight the following information respecting the anemometer at Port Blair is rather startling (p. 91):—"On November 19, 1904, the velocity of wind registered . . . was 1112 miles, the greatest on record since December 1, 1897, on which day 918 miles was registered." The *day* is rather an unusual unit of time for velocities, and why the limitation? There are other instances where the method of presenting the facts might be improved upon, but fortunately the absence of a good English style does not necessarily imply a corresponding laxity in scientific accuracy. Another criticism that is likely to present itself to many readers is that the season 1904-5 is becoming now a little remote.

C. CHREE.

PROF. CHARLES STEWART, F.R.S.

ON Friday, September 27, Prof. Charles Stewart, conservator of the museum of the Royal College of Surgeons, died at the age of sixty-seven after a few weeks' illness, following some years of failing health.

Prof. Stewart was a native of Plymouth, where both his father and grandfather had been in practice. Following their example, he too entered the medical profession, being educated at St. Bartholomew's Hospital, and taking his M.R.C.S. in 1862. After some few years spent at Plymouth he returned to London, upon obtaining (in 1866) the post of curator of the museum at St. Thomas's Hospital. Later, in 1871, he became lecturer on comparative anatomy at

the same school, and in 1881 joint lecturer with Prof. John Harley on physiology. He also for some years held the professorship of biology and physiology at Bedford College.

During this St. Thomas's period, Prof. Stewart accumulated, by incessant work as a teacher and museum curator, and mainly by direct observation, that vast fund of biological knowledge for which he was so well known, and of which he was so lavish to all who came to him for help in their difficulties. In the comparatively small museum at St. Thomas's, he perfected his natural talent for practical museum work, performing with his own hands all the processes necessary in the preparation and display of anatomical specimens, and gaining a thorough insight into all the minutiae of museum management. At the same time, the variety of his teaching appointments, embracing anatomy, physiology, botany, and pathology, effectually prevented him from becoming narrow or specialised. Thus, when in 1884 the conservatorship of the Royal College of Surgeons' museum fell vacant, through the appointment of Sir William Flower to the control of the British Museum (Natural History), Prof. Stewart was singled out by his practical experience and wide attainments as Flower's natural successor.

Although during his twenty-three years of office at the College of Surgeons Prof. Stewart supervised and stimulated the growth of all parts of the museum, he made the object of his special care the improvement and completion of that section of the museum—"the physiological series of comparative anatomy"—in which are embodied John Hunter's philosophical researches into the normal processes of life. For the advancement of this great collection of adaptive modifications, Prof. Stewart laboured consistently almost to the day of his death, adding or planning new specimens, lecturing so long as health allowed, and finally editing, and in part writing, the first few volumes of a full descriptive catalogue.

The year after his appointment as conservator he was elected Hunterian professor of human and comparative anatomy at the college, and annually until 1902 gave series of lectures that reflected the work he was doing in the museum, and served as introductions to the several sections of the "physiological series." At this time he also delivered some "Friday evening" lectures at the Royal Institution, and was Fullerian professor of physiology there from 1894 to 1897. In his own way, Prof. Stewart was inimitable as a lecturer. He had an easy flow of language, delivered with a persuasive eagerness that compelled attention, and illustrated by wonderful free-hand drawings on the blackboard. The combined result was a picture, not easily forgotten, of interwoven word and line animated by a charming personality. Unfortunately, his lectures were delivered from the scantiest notes, so that little remains of his original researches except some few papers in the publications of the Linnean Society and in some microscopical journals which give but a feeble idea of his real powers.

Since 1866 Prof. Stewart had been a Fellow of the Linnean Society; and from 1890-4 held the office of president. He was also deeply interested in the Royal Microscopical Society, being one of its secretaries from 1878-82; and he was an original member, and for some years treasurer, of the Anatomical Society. He also was an ardent supporter of the Marine Biological Association. In 1896 he was elected to the fellowship of the Royal Society, and three years later was honoured by the conferment upon him of the degree of LL.D. *hon. caus.* by the University of Aberdeen.

In brief, Prof. Stewart was professionally a successful teacher, a great lecturer, and a master of all museum arts; personally he was the simplest and